

connected with this plane, and there is an index corresponding with the diameter which points out the reading of the compass for the time of observation. Possibly in those merchant-ships where the altitude of the sun at noon is the only observation made, such an instrument might give useful warning to the helmsman, but the method only admits of a loose approximation.

New Variable Star.

Professor Argelander, in a letter to the Editor of the *Astronomische Nachrichten* (*Astron. Nach.*, No. 9580), announces the discovery of a new variable star, namely, the star W. VI. No. 1911 = Lal. No. 13825. It is represented by Lalande as an 8^m ; by Bessel, once as an 8^m , and once as an 8.9^m . Fellöcker marks it in the Catalogue as an 8^m , but upon the Chart as an 8.9^m . Bremiker makes it a 9^m . However, on the 4th and 5th of March, 1854, and on the 4th of March, 1855, it was not visible in the comet-searcher, nor was it seen in the heliometer on the 30th of the same month; but it must be admitted that on this last occasion the sky was unfavourable for observation. Two days afterwards, however, it appeared like a faint star of the 9.10^m ; and on the 11th and 12th of April it shone like a faint 9^m . It is of a very ruddy colour, and, like many other variable stars of small magnitude, appears to have a period of rather more than a year. Professor Argelander proposes to call it *R Canis Minoris*, and expresses his intention of following it as long as possible.

On several Stars which have Disappeared from his Ecliptical Charts. By M. Chacornac.

"On the 7th of August, 1852, at 15^h , I placed upon one of my charts, in $21^h 36^m.5$ of right ascension and $+14^\circ 33'.9$ of declination, a star of the seventh magnitude, which was situate between two stars of the ninth magnitude. The position of this star was obtained by comparisons made with another star of the eighth magnitude in its vicinity.

"Next day I only compared with the heavens the regions of the chart where small stars were found to be situate; unfortunately, the region in which the star of the seventh magnitude had been placed was almost entirely wanting in small stars. I did not, therefore, verify it on that day, expecting on a future occasion to fill it up with small stars, and to re-observe at the same time the star which I had placed there.

"On the 20th of the same month, having finished this chart, I was very much surprised not to find again the star of the seventh magnitude, while those of the ninth magnitude were found to be perfectly in the place which my chart assigned to

them. Convinced by this circumstance, and by the verification of the numerical results obtained on the 7th of August, that there could be no mistake, I undertook forthwith the search of this star upon the supposition that it was a planet, describing its arc of retrogradation. With this object in view, I constructed a rough draught of the neighbouring stars as far as the ninth magnitude. On the 30th of August this chart already comprised in the direction of the retrogradation 14° of right ascension, and extended on each side of the ecliptic 8° to 10° of latitude, without obtaining any result. I then learned that Mr. Hind had just discovered the planet *Melpomene* in the very region which I was exploring. This planet being fainter than the stars with which I was occupied, I immediately abandoned the search of the star of the seventh magnitude, which I supposed to be variable, in order to resume the construction of my charts. Since that time the star has not reappeared.

"On the 30th of December, 1852, I placed upon my charts, in $8^{\text{h}} 47^{\text{m}}.3$ of right ascension and $+17^{\circ} 44'$ of declination, a star of the ninth magnitude. I verified the position of this star only twelve months afterwards; that is to say, on the 4th of December, 1853. It was then invisible, and has not since reappeared. This star was near another very red star of the sixth magnitude.

"On the 5th of July, 1853, I also placed on a rough draught, in $16^{\text{h}} 8^{\text{m}}.8$ of right ascension and $-22^{\circ} 21'$ of declination, a star of the ninth magnitude near a nebula; these stars were not verified in the same year.

"On the 19th of May, 1854, upon completing this chart, I noticed that this star of the ninth magnitude had disappeared from the place where it was observed. It remained invisible till the month of August of the same year. Being sought for again on the 4th of April, 1855, it was found to be of the tenth magnitude.

"On the 8th of April, 1853, I observed a star of the eleventh magnitude in $11^{\text{h}} 3^{\text{m}}.3$ of right ascension and $+6^{\circ} 54'$ of declination. This star had precisely the same right ascension as another star of the ninth magnitude which was very near to it. On the 15th of the same month it was invisible. Having been again searched for on the 16th and 17th as a planet, I was not able to find it, either on account of the brightness of the moon or in consequence of its inconsiderable motion. On the 18th I knew that it was the planet *Themis* which M. De Gasparis had just discovered.

"On the 27th of December, 1853, I observed between two stars, very close to each other, between the eighth and ninth magnitudes, a star of the tenth, which I had not hitherto noticed. This chart not being filled up with small stars, I did not attach any other importance to the observation than that suggested by a multitude of new stars which are encountered in observations of this kind. I, therefore, placed this star of the tenth magnitude upon my chart, writing beside it at full length *triple star*.

"This triple star was only verified on the 26th of March, 1854.

It was then only double, the small star of the tenth magnitude having disappeared. I examined this double star with a high magnifying power, and I again searched for the star which had disappeared upon the supposition of its being a planet, but without result. The following is the position of the double star:— $4^{\text{h}} 14^{\text{m}}.6$ of right ascension $+23^{\circ} 58'$ of declination.

“On the 30th of December, 1853, I observed a star of the eleventh magnitude in $3^{\text{h}} 33^{\text{m}}.7$ of right ascension and $+20^{\circ} 51'$ of declination. The unfavourable state of the weather prevented me from verifying its position with certainty till the 20th of January, 1854; it was then invisible. I have searched for it again as a planet, but without success. It has not reappeared.

“On the 10th of January, 1854, I found that a star of the eleventh magnitude, which must have been placed upon my charts between the 4th of September and the 29th of November, 1853, in $4^{\text{h}} 26^{\text{m}}.9$ of right ascension and $+21^{\circ} 26'.8$ of declination, had disappeared. I searched for it again in my charts as a planet without result. It has not reappeared.

“On the 26th of January, 1854, I undertook the construction of a rough draught, upon which I placed very few stars during the evenings of the 30th and 31st of January. I did not resume the construction of this chart till the 30th of July of the same year: two stars had then disappeared from it. The one of the eleventh magnitude was not reobserved till later with the great refractor of the Observatory of Paris; it was then only of the thirteenth magnitude. The other of the eleventh magnitude has not been reobserved. The latter was situated in $23^{\text{h}} 27^{\text{m}}.5$ of right ascension and $-4^{\circ} 15'$ of declination.

“On the 19th of July a star of the tenth magnitude was placed upon my charts in $21^{\text{h}} 7^{\text{m}}$ of right ascension and $-15^{\circ} 5'$ of declination. It was the planet *Urania* found by Mr. Hind. On the same day I found that a star of the ninth magnitude which must have been placed upon the chart in the course of the month of January 1854, in $21^{\text{h}} 20^{\text{m}}.2$ of right ascension and $-12^{\circ} 53'$ of declination, had disappeared.

“This star, which had been observed during the twilight, formed with other stars of the ninth magnitude a remarkable configuration. It was a little more brilliant than another star also of the ninth magnitude, which was very near to it.

“On the 11th of January, 1855, I found that a star of the eleventh magnitude, which had been placed on the 26th of October, 1854, upon one of my charts in $7^{\text{h}} 30^{\text{m}}.3$ of right ascension and $+23^{\circ} 54'.7$ of declination, had reappeared. I was not able to reobserve this star earlier on account of the unfavourable weather which prevailed at Paris during the whole season of autumn. It has not reappeared.

“On the 28th of October, 1854, I found that a star of the eleventh magnitude, placed upon my charts in $2^{\text{h}} 47^{\text{m}}$ of right ascension and $+17^{\circ} 32'.5$ of declination, had disappeared on the 26th of September in the same year.

"It was a position of the planet *Pomona*, which M. Goldschmidt had just discovered.

"In the ninth hour, and quite recently, two stars have also disappeared from the positions which my charts assigned to them.

"One of the tenth magnitude which was placed upon these charts towards the end of the year 1854, has been invisible since the 17th of January, 1855. The other, which was of the eleventh magnitude, was observed on the 25th of January of the same year, and placed upon my charts in $9^h 27^m.2$ of right ascension and $+16^\circ 8'7$ of declination. It had disappeared on the 19th of March, at which date only I was enabled to verify its position.

"These two stars have been searched for again as planets and variable stars, but without result.

"On the 5th of October, 1853, I perceived a star of the twelfth magnitude in a region wherein my chart did not exhibit any. This chart was, however, pretty well filled up. I affixed a mark to this star and proceeded on the following day to verify its position. Clouds permitted only a short verification, during which I found that the star had disappeared from the place where I had observed it on the preceding evening, but I was unable to find it again in the neighbouring region. I searched for it again on the following days with great care, but without success. Since then it has not been found in the position of the 5th of October, which was this,—

$$\text{R.A.} = 0^h 44^m.4$$

$$\text{Decl.} = +8^\circ 46'.2$$

"In order that it may be understood how I have allowed so many stars to escape from me, I ought to mention that, in order to construct my ecliptic zones with rapidity,—although I always had the intention of verifying on the following evening the position of the stars observed on any preceding evening,—I have frequently been compelled by the unfavourable change in the weather to defer the verifications to other epochs, and to profit by the beautiful nights in occupying myself especially with the regions of the ecliptic in opposition to the sun. I ought also to mention that it has happened to me, at Paris especially, to have been obliged to postpone for several months similar verifications by the coincidence of the rare instances of a clear sky with the full moon; for it is known that when the question relates to the small planets, the great brightness which the moon diffuses over the entire heavens, when it is approaching opposition, effaces their light as effectually as the close proximity of that body. The usually not very serene condition of the sky at Paris, the inconsiderable altitude of these stars above the horizon, are so many causes which prevent the searching for and verifying of them as often as is possible in the case of stars of a higher magnitude.

"*Imperial Observatory, Paris, April 15, 1855.*"